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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/453,055	12/02/99	YAMAGUCHI	E 32405W027

EXAMINER	
AFTERGUT, J	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/453,055	YAMAGUCHI ET AL.	
	Examin r	Art Unit	
	Jeff H. Aftergut	1733	

-- The MAILING DATE of this communication appears on the cover sh t with the correspond nc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-9 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-9 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
18) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other: .

Claim Rejections - 35 USC § 102/103

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 2, 8, and 9 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Cundiff et al.

Cundiff et al taught a process for forming a honeycomb sandwich composite panel comprising the steps of stacking dry fabric 18a, 18b on both sides of a honeycomb core 12 with a thermosetting sealing material (14a, 16a, 14b, 16b) having an adhesive property there between, heating the assembly at the curing temperature of the sealing material (the adhesive films 14a and 14b as well as the prepreg material 16a and 16b) to cause the sealing material to harden, see column 4, lines 4-8 and column 8, lines 64-column 9, line 7, for example, impregnating the dry fabric with a thermosetting resin, see column 4, lines 8-11 and column 9, lines 8-22, and curing the resin of the resin impregnated dry fabric by hot pressing the entire assembly, see column 4, lines 11-14, column 9, lines 23-30. The reference taught the regulation of the temperature during the processing in order to allow for the curing of the resin of the film and the prepreg layer and varied (reduced) the same prior to introduction of the impregnating resin for the dry fiber on the

exterior of the assembly in the resin transfer molding operation. The reference failed to make mention of the use a sealing material, however the ultimate purpose of the resin layers 14a, 14b as well as the prepreg layers 16a and 16b was to seal off the core such that the core remained hollow after the RTM operation. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the adhesive film and prepreg layers to seal the core to prevent resin intrusion into the same in the process of making a honeycomb core panel wherein the same included the attachment of a dry fiber layer onto the exterior of the core followed by the impregnation of the dry layers with RTM as suggested by Cundiff et al. Note that the use of pressure during the RTM operation was intrinsic in the RTM operation and one skilled in the art would have understood the same as being conventional in the art.

With regard to claims 8 and 9, the reference to Cundiff et al suggested that after the layers 14a, 14b, 16a, 16b were cured the temperature of the mold was lowered in order to prepare the same for impregnation and RTM.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cundiff et al in view of Fellman et al, Ahrens et al and Browne optionally further taken with Narita et al.

Cundiff et al is discussed at length above in paragraph 3 and the applicant is referred to the same for a complete discussion of the reference. The reference failed to teach that the sealing

layer would have included microspheres of glass therein in the same. However, it was known at the time the invention was made to utilize glass microspheres within resin layers in order to impart stiffness to the material at a reduction in weight and cost relative to the prepreg layers of material and the formation of a laminate of several layers of prepreg material with the glass microspheres was known in the art as useful in the manufacture of aircraft laminate as evidenced by Fellman et al, Ahrens et al and Brown et al.

Fellman et al suggested that those skilled in the art would have understood that syntactic foam layers (which was a layer of thermosetting resin with glass microspheres or microballoons therein) would have been a well known replacement for prepreg layers which were less expensive and yet provided the requisite stiffness needed to make the laminate. Additionally, the reference suggested that those skilled in the art would have known that the resin layers which contained the microshperes would have been laminated alternatively between reinforcement to form the laminates with increased stiffness. To further evidence the same, the reference to Ahrens et al is cited. Note that in Ahrens et al the thermosetting resin with the microspheres therein was formed into a prepreg and then laminated with two prepreg layers there between in the formation of the composite article. The reference suggested that such composites would have been useful in aircraft structures (note that Cundiff et al was assigned to Boeing and that the panel formed therein was clearly useful in an aircraft). The reference to Browne et al suggested that the inclusion of a glass microsphere resin layer in a composite would have increased the composites impact resistance and the syntactic foam material employed in the operation conventionally included a scrim layer therein. The reference to Browne made it clear that those skilled in the art would have understood that the desirability of providing glass microshperes

within a layer of the sealing material in order to note only increase the stiffness of the composite panel but also to increase the impact resistance of the same. It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a composite panel with resin impregnated reinforced facings as suggested by Cundiff where the sealing resin layers included a plurality of glass microspheres as taught by Fellman et al, Ahrens et al and Browne et al for the purpose of increasing the stiffness of the panel at a reduced cost as well as increasing the impact resistance of the panel. As to the particular techniques used to produce the glass microballoons within the sealing layers, the applicant is advised that the prepreg layers described above would have constituted a resin film and that the glass microspheres were disposed between the same. Additionally, the references suggested that alternating layers of the prepreg material with the glass microspheres would have been known. Additionally, note that the reference to Browne suggested that the microsphere layer would have included a scrim therein (a carrier layer). With regard to claim 7, note that the temperature ranges defined by Cundiff were such that the adhesive of the sealing layers would have been capable of curing at a temperature less than the temperature that one performed RTM as defined.

While it is believed that the references as set forth above suggested how one would have formed the prepreg molding material, to further evidence that those skilled in the art of glass microballoons would have known how to make the prepreg laminates, the reference to Narita et al is cited. Narita et al suggested that those skilled in the art would have included applying resin impregnated chopped fiber layers to a core which comprised resin and hollow microballoons of glass. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the techniques of Narita to form a prepreg material useful for the formation of a

composite panel as suggested by the combination of Cundiff et al, Fellman et al, Ahrens et al and Brown et al.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 8 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 8 and 9 are identical. It is suggested that one of claims 8 or 9 be canceled.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff H. Aftergut whose telephone number is 703-308-2069. The examiner can normally be reached on Monday-Friday 6:30-3:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael W. Ball can be reached on 703-308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3599 for regular communications and 703-305-7718 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Jeff H. Aftergut
Primary Examiner
Art Unit 1733

JHA
April 5, 2001